AF
IFW

O I P E IAP76
AUG 30 2007
PATENT & TRADEMARK OFFICE

PTO/SB/21 (04-07)
Approved for use through 09/30/2007. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Application Number	09/621,407
Filing Date	July 21, 2000
First Named Inventor	William J. Domino
Art Unit	2686
Examiner Name	Nagmeh Mehrpour
Attorney Docket Number	013629.00030
Total Number of Pages in This Submission	30

ENCLOSURES *(Check all that apply)*

- [ ] Fee Transmittal Form
  - [ ] Fee Attached
- [ ] Amendment/Reply
  - [ ] After Final
  - [ ] Affidavits/declaration(s)
- [ ] Extension of Time Request
- [ ] Express Abandonment Request
- [ ] Information Disclosure Statement
- [ ] Certified Copy of Priority Document(s)
- [ ] Reply to Missing Parts/ Incomplete Application
  - [ ] Reply to Missing Parts under 37 CFR 1.52 or 1.53
- [ ] Drawing(s)
- [ ] Licensing-related Papers
- [ ] Petition
- [ ] Petition to Convert to a Provisional Application
- [ ] Power of Attorney, Revocation Change of Correspondence Address
- [ ] Terminal Disclaimer
- [ ] Request for Refund
- [ ] CD, Number of CD(s) ______
  - [ ] Landscape Table on CD
- [ ] After Allowance Communication to TC
- [x] Appeal Communication to Board of Appeals and Interferences
- [ ] Appeal Communication to TC **(Appeal Notice, Brief, Reply Brief)**
- [ ] Proprietary Information
- [ ] Status Letter
- [x] Other Enclosure(s) (please Identify below):

Return Postcard

Remarks

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm Name	Jackson Walker L.L.P.		
Signature			
Printed name	Christopher J. Rourk		
Date	August 27, 2007	Reg. No.	39,348

CERTIFICATE OF TRANSMISSION/MAILING

I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below:

Signature	J. Farragher		
Typed or printed name	Joan B. Farragher	Date	August 27, 2007

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BOARD OF PATENT APPEALS AND INTERFERENCES

Appl. No.	:	09/621,407	Confirmation No. 4092
Applicants	:	Domino et al.	
Filed	:	July 21, 2000	
Art Unit	:	2686	
Examiner	:	Nagmeh Mehrpour	
Docket No.	:	013629.00030	
Customer No.	:	33649	

OIPE IAP76 AUG 30 2007 PATENT & TRADEMARK OFFICE

Certificate of Mailing Under 37 C.F.R. 1.8(a)

I hereby certify that these documents are being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to: Mail Stop: Appeal Brief – Patents, Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450 on the date indicated below:

Dated: August 27, 2007

Joan B. Farragher

Joan B. Farragher

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

ATTENTION: Board of Patent Appeals and Interferences

APPELLANTS' BRIEF (37 C.F.R. 41.37)

This brief is in furtherance of the Notice of Appeal, filed in this case on November 18, 2005, the Notice of Non-Complaint Appeal Brief mailed November 6, 2006, and the Office Action mailed March 22, 2007, and the renewed Notice of Appeal filed June 22, 2007 and received by the Patent Office on June 25, 2007.

No additional fees are believed to be required under § 1.17(c), and any required petition for extension of time for filing this brief and related fees are dealt with in the accompanying TRANSMITTAL OF APPEAL BRIEF.

TABLE OF CONTENTS

The final page of this brief bears the practitioner's signature.

I REAL PARTIES IN INTEREST (37 C.F.R. 41.37(c)(1))

The real party in interest in this appeal is:

☒ the following party:

Skyworks Solutions, Inc., by an assignment from the Inventors to Conexant Systems, Inc., recorded at Reel 01101, Frame 0229 on 7/21/2000; an assignment from Conexant Systems, Inc. to Washington Sub., Inc. recorded at Reel 13177, Frame 505 on 8/14/2002; the merger of Washington Sub., Inc. into Alpha Industries, Inc., recorded at Reel 13239, Frame 758 on 9/3/2002; and the merger of Alpha Industries, Inc. into Skyworks Solutions, Inc., recorded at Reel 13450, Frame 880 on 10/6/2003.

II RELATED APPEALS AND INTERFERENCES (37 C.F.R. 41.37(c)(2))

With respect to other appeals or interferences that will directly affect, or be directly affected by, or have a bearing on the Board's decision in the pending appeal:

A ☒ there are no such appeals or interferences.

III STATUS OF CLAIMS (37 C.F.R. 41.37(c)(3))

A. TOTAL NUMBER OF CLAIMS IN APPLICATION

Claims in the application are: 23

B. STATUS OF ALL THE CLAIMS IN APPLICATION

1. Claims rejected: Claims 1 through 23

C. CLAIMS ON APPEAL

The claims on appeal are: Claims 1 through 23

IV STATUS OF AMENDMENTS (37 C.F.R. 41.37(c)(4))

No amendments have been submitted subsequent to the final rejection of the claims.

V SUMMARY OF THE CLAIMED SUBJECT MATTER (37 C.F.R. 41.37(c)(5))

Claim 1 includes a system for transmitting and receiving data comprising a direct-conversion receiver receiving a signal modulated on a carrier frequency signal, the direct-conversion receiver further comprising one or more subharmonic local oscillator mixers; a local oscillator coupled to the direct conversion receiver, the local oscillator generating a signal having a frequency equal to a subharmonic of the carrier frequency signal; and a transmitter coupled to the local oscillator (by way of example and not of limitation, see Fig. 1 and description at page 7, line 8 to page 12, line 6).

Claim 2 includes the system of claim 1 wherein the direct conversion receiver further comprises: a phase shifter coupled to a first subharmonic local oscillator mixer, where the output of the first subharmonic local oscillator mixer is used to generate a quadrature signal of a phase shift keyed signal; and a second subharmonic local oscillator mixer, where the output of the second subharmonic local oscillator mixer is used to generate an in-phase signal of a phase shift keyed signal (by way of example and not of limitation, see Fig. 1 and description at page 7, line 8 to page 12, line 6).

Claim 3 includes the system of claim 2 wherein the phase shifter is further coupled to the local oscillator (by way of example and not of limitation, see Fig. 1 and description at page 7, line 8 to page 12, line 6).

Claim 4 includes the system of claim 2 further comprising a low-noise amplifier coupled to the phase shifter, wherein the signal modulated on the carrier frequency signal is received by the low-noise amplifier and is transmitted to the phase shifter after being amplified (by way of example and not of limitation, see Fig. 1 and description at page 7, line 8 to page 12, line 6).

Claim 5 includes the system of claim 1 further comprising a frequency multiplier coupled between the local oscillator and the transmitter, wherein the frequency multiplier increases the frequency of the oscillator (by way of example and not of limitation, see Fig. 1 and description at page 7, line 8 to page 12, line 6).

Claim 6 includes the system of claim 5 wherein the frequency multiplier increases the frequency of the oscillator up to the frequency of the carrier signal (by way of example and not of limitation, see Fig. 1 and description at page 7, line 8 to page 12, line 6).

Claim 7 includes the system of claim 1 wherein the transmitter comprises: a frequency multiplier coupled to the local oscillator; and an in-phase/quadrature modulator coupled to the

frequency multiplier, receiving an in-phase modulation input signal and a quadrature modulation input signal, and outputting a quadrature phase shift keyed signal modulated at the multiplied local oscillator frequency (by way of example and not of limitation, see Fig. 1 and description at page 7, line 8 to page 12, line 6).

Claim 8 includes 8 includes the system of claim 1 wherein the transmitter comprises: an in-phase/ quadrature modulator coupled to the local oscillator, receiving an in-phase modulation input signal and a quadrature phase shift keyed signal modulated at the local oscillator frequency; and a frequency multiplier coupled phase/quadrature modulator and multiplying the quadrature phase shift keyed signal (by way of example and not of limitation, see Fig. 3 and description at page 13, line 11 to page 14, line 23).

Claim 9 includes the system of claim 1 wherein the transmitter comprises: a frequency modulator coupled to the local oscillator, wherein the local oscillator is modulated by the frequency modulator; a phase locked loop coupled to the frequency modulator and the local oscillator; and a switch coupled between the local oscillator and the phase locked loop, wherein the switch can couple the phase locked loop to the local oscillator during a transmit cycle and can decouple the phase locked loop from the local oscillator during a receive cycle (by way of example and not of limitation, see Fig. 4 and description at page 14, line 24 to page 16, line 15).

Claim 10 includes the system of claim 1 wherein the transmitter comprises: a frequency modulator coupled to the local oscillator, where the local oscillator is modulated by the frequency modulator; a voltage-controlled reference oscillator coupled to the frequency modulator, where the voltage-controlled reference oscillator is modulated by the frequency modulator; and a phase locked loop coupled to the local oscillator in a feedback loop, the phase locked loop further coupled to the voltage controlled oscillator (by way of example and not of limitation, see Fig. 5 and description at page 16, line 16 to page 17, line 21).

Claim 11 includes a method for receiving and transmitting data comprising: receiving a carrier signal modulated with a data signal; mixing the carrier signal with a subharmonic local oscillator signal to extract a baseband signal; multiplying the subharmonic local oscillator signal; and modulating an outgoing data signal with the multiplied subharmonic local oscillator signal (by way of example and not of limitation, see Fig. 6 and description at page 17, line 22 to page 20, line 2).

Claim 12 includes the method of claim 11 wherein mixing the carrier signal with the

subharmonic local oscillator signal to extract the baseband signal further comprises: mixing the carrier signal with the subharmonic local oscillator signal to extract an in-phase signal; phase-shifting the subharmonic local oscillator signal; and mixing the carrier signal with the phase-shifted subharmonic local oscillator signal to extract a quadrature phase signal (by way of example and not of limitation, see Fig. 6 and description at page 17, line 22 to page 20, line 2).

Claim 13 includes the method of claim 11 wherein mixing the carrier signal with the subharmonic local oscillator signal to extract the baseband signal further comprises: mixing the carrier signal with the subharmonic local oscillator signal to extract an in-phase signal; phase-shifting the carrier signal; and mixing the phase-shifted carrier signal with the subharmonic local oscillator signal to extract a quadrature phase signal (by way of example and not of limitation, see Fig. 6 and description at page 17, line 22 to page 20, line 2).

Claim 14 includes the method of claim 11 wherein modulating the outgoing data signal with the subharmonic local oscillator signal comprises: multiplying the subharmonic local oscillator signal; and modulating an outgoing in-phase data signal and an outgoing quadrature phase data signal with the multiplied subharmonic local oscillator signal (by way of example and not of limitation, see Fig. 6 and description at page 17, line 22 to page 20, line 2).

Claim 15 includes the method of claim 11 wherein modulating the outgoing data signal with the subharmonic local oscillator signal comprises: modulating an outgoing in-phase data signal and an outgoing quadrature phase data signal with the subharmonic local oscillator signal to generate a modulated outgoing data signal; and multiplying the modulated outgoing data signal to generate the outgoing data signal (by way of example and not of limitation, see Fig. 6 and description at page 17, line 22 to page 20, line 2).

Claim 16 includes the method of claim 11 wherein modulating the outgoing data signal with the subharmonic local oscillator signal comprises: frequency modulating the subharmonic local oscillator signal during a transmit cycle; and interrupting frequency modulation of the subharmonic local oscillator signal during a receive cycle (by way of example and not of limitation, see Fig. 6 and description at page 17, line 22 to page 20, line 2).

Claim 17 includes the method of claim 16 further comprising opening a phase locked loop during the transmit cycle to lock the subharmonic local oscillator signal (by way of example and not of limitation, see Fig. 6 and description at page 17, line 22 to page 20, line 2).

Claim 18 includes the method of claim 16 further comprising frequency modulating a

reference oscillator signal of a phase locked loop that locks the subharmonic local oscillator signal (by way of example and not of limitation, see Fig. 6 and description at page 17, line 22 to page 20, line 2).

Claim 19 includes the method of claim 11 wherein modulating the outgoing data signal with the subharmonic local oscillator signal comprises: modulating an outgoing in-phase data signal and an outgoing quadrature phase data signal with the subharmonic local oscillator signal at a subharmonic modulation index to generate a modulated outgoing data signal; and multiplying the modulated outgoing data signal by an inverse subharmonic to generate the outgoing data signal (by way of example and not of limitation, see Fig. 6 and description at page 17, line 22 to page 20, line 2).

Claim 20 includes a system for transmitting and receiving data comprising: a low noise amplifier receiving a modulated incoming carrier signal having a carrier signal frequency; a local oscillator generating a signal having a subharmonic frequency of the carrier signal; a first mixer coupled to the low noise amplifier and the local oscillator, the first mixer receiving the modulated incoming carrier signal and generating an in-phase incoming data signal; a second mixer coupled to the low noise amplifier and the local oscillator, the second mixer receiving the modulated incoming carrier signal and generating a quadrature phase incoming data signal; a modulator coupled to the local oscillator, the modulator receiving an outgoing data signal and modulating the outgoing data signal onto the local oscillator signal to generate an outgoing modulated carrier signal; and a transmit amplifier coupled to the modulator, the transmit amplifier amplifying the outgoing modulated carrier signal to a transmission power level (by way of example and not of limitation, see Fig. 1 and description at page 7, line 8 to page 12, line 6).

Claim 21 includes the system of claim 20 further comprising a general purpose computing platform coupled to the first mixer, the second mixer, and the modulator, the general purpose computing platform decoding an incoming data signal from the in-phase incoming data signal and the quadrature phase incoming data signal, and generating the outgoing data signal (by way of example and not of limitation, see Fig. 7 and description at page 20, line 3 to page 21, line 4).

Claim 22 includes the system of claim 20 further comprising a telephone handset coupled to the first mixer, the second mixer, and the modulator, the telephone handset decoding an incoming data signal from the in-phase incoming data signal and the quadrature phase incoming

data signal, and generating the outgoing data signal (by way of example and not of limitation, see Fig. 7 and description at page 20, line 3 to page 21, line 4).

Claim 23 includes the system of claim 20 wherein an antenna is directly connected to the low noise amplifier, and the low noise amplifier is directly connected to the one or more subharmonic local oscillator mixers (by way of example and not of limitation, see Fig. 1 and description at page 7, line 8 to page 12, line 6).

VI GROUNDS OF REJECTION TO BE REVIEWED UPON APPEAL (37 C.F.R. 41.37(c)(6))

1. Whether the Examiner has improperly rejected claims 1-8 and 11-23 under 35 U.S.C. § 102(e) over U.S. Patent No. 6,6,658,237 to Rozenblit.

2. Whether the Examiner has improperly rejected claim 10 under 35 U.S.C. § 103(a) over Rozenblit.

3. Whether the Examiner has improperly rejected claim 9 under 35 U.S.C. § 103(a) over Rozenblit in view of Bickley.

VII ARGUMENTS - (37 C.F.R. 41.37(c)(7))

1. The Examiner has improperly rejected claims 1-8 and 11-23 under 35 U.S.C. § 102(e) over Rozenblit.

Rozenblit fails to provide a basis for the rejection of claims 1-8 and 11-23 under 35 U.S.C. 102(e), because it fails to disclose each element of the claimed invention. Consider claim 1, which includes "a direct-conversion receiver receiving a signal modulated on a carrier frequency signal, the direct-conversion receiver further comprising one or more subharmonic local oscillator mixers; a local oscillator coupled to the direct conversion receiver, the local oscillator generating a signal having a frequency equal to a subharmonic of the carrier frequency signal; and a transmitter coupled to the local oscillator." In rejecting claim 1, the Examiner states that Rozenblit teaches "a direct conversion receiver 310 receiving a signal modulated on a carrier frequency signal the direct conversion receiver 303," citing to figure 8 and col. 18, lines 30-39 of Rozenblit. However, 303 of Rozenblit is not a direct conversion receiver, but rather an upconverter, as clearly stated at col. 18, line 44. As such, it is unclear whether the Examiner is alleging that upconverter 303 is also a direct conversion receiver.

The Examiner further states that Rozenblit discloses "one or more subharmonic local oscillator 311 mixers 522," citing to figure 8 and col. 13 lines 67 and col. 14 lines 1-20, and "a transmitter 300 coupled to the local oscillator 311," citing to figure 8 and col. 18, lines 39-51, but omits the limitation of "the local oscillator generating a signal having a frequency equal to a subharmonic of the carrier frequency signal." As can be clearly seen in figure 8 of Rozenblit, the local oscillator 518 generates a signal having a frequency of 450.25-480 MHz, whereas the carrier frequency signal is 45 MHz for the GSM band, 95 MHz for the DCS band, and 80 MHz for the PCS band. Rozenblit, col. 12, lines 45-54. As such, the local oscillator of Rozenblit does

not generate a signal having a frequency equal to a subharmonic of the carrier frequency signal, but rather a range frequencies that are many time greater than any of the carrier frequency signals of Rozenblit.

Furthermore, mixers 522 and 523 are not sub-harmonic mixers, as disclosed at Rozenblit, col. 20, lines 3-8: "Thus, DCR 310a includes two mixers, 522 and 523, and DCR 310b includes two mixers, 527 and 528. Each of these mixers has an LO input and an RF input, and each is configured to switch at twice the frequency of the signal provided at the LO input."

A better understanding of the system of Rozenblit can be obtained by considering the transmission systems in which Rozenblit is utilized. As noted at Rozenblit, col. 2, lines 50-61, "Regardless of which GSM standard is used, once a mobile station is assigned a channel, a fixed frequency relation is maintained between the transmit and receive frequency bands. In GSM (900 MHz), this fixed frequency relation is 45 MHz. If, for example, a mobile station is assigned a transmit channel at 895.2 MHz, its receive channel will always be at 940.2 MHz. This also holds true for DCS and PCS; the frequency relation is just different. In DCS, the receive channel is always 95 MHz higher than the transmit channel and, in PCS, the receive channel is 80 MHz higher than the transmit channel. This frequency differential will be referred to in the ensuing discussion as the frequency offset." Thus, the frequency difference between the transmit and receive bands is a fixed carrier signal, and can vary within a predetermined frequency range, as shown in Fig. 2 of Rozenblit. See, e.g., Rozenblit, col. 12, lines 45-54 ("The frequency of the carrier input provided by carrier input source 302 is a variable which is determined responsive to the selected band. In one implementation, the frequency is set to the frequency offset of the selected band. Thus, if the selected band is the GSM band, the frequency of the carrier input is selected to be about 45 MHz; if the DCS band, the frequency of the carrier input is selected to be

about 95 MHz; and if the selected band is the PCS band, the frequency of the carrier input is selected to be about 80 MHz.")

Thus, as shown in Figs. 1A through 1D of Rozenblit, transmit and receive channels are assigned, where specific transmit and receive frequencies are based on the carrier frequency relationship between the transmit and receive channels. As such, Rozenblit is simply inapplicable to the invention of claim 1, and the rejection of claim 1 must be **REVERSED**.

Claim 2 includes the system of claim 1 wherein the direct conversion receiver further comprises: a phase shifter coupled to a first subharmonic local oscillator mixer, where the output of the first subharmonic local oscillator mixer is used to generate a quadrature signal of a phase shift keyed signal; and a second subharmonic local oscillator mixer, where the output of the second subharmonic local oscillator mixer is used to generate an in-phase signal of a phase shift keyed signal. Claim 3 includes the system of claim 2 wherein the phase shifter is further coupled to the local oscillator. Claim 4 includes the system of claim 2 further comprising a low-noise amplifier coupled to the phase shifter, wherein the signal modulated on the carrier frequency signal is received by the low-noise amplifier and is transmitted to the phase shifter after being amplified. As previously discussed, the mixers 522 and 523 of Rozenblit multiply the local oscillator frequency, and are therefore not subharmonic. The rejection of claims 2, 3 and 4 must therefore be **REVERSED**.

Claim 5 includes the system of claim 1 further comprising a frequency multiplier coupled between the local oscillator and the transmitter, wherein the frequency multiplier increases the frequency of the oscillator. Claim 6 includes the system of claim 5 wherein the frequency multiplier increases the frequency of the oscillator up to the frequency of the carrier signal. The Examiner asserts that multipliers 610 and 611 of Rozenblit increase the frequency of the oscillator, but these multipliers multiply amplitude, not frequency. Rozenblit does disclose that

the amplitude multipliers are switched at twice the frequency of the local oscillator frequency, but that is simply not what is recited by claim 5. In fact, Rozenblit discloses at col. 16, lines 15-26, the very section relied on by the Examiner for support, that such a frequency multiplication ***does not occur***: "It is important to note that a signal at the frequency of the multiplication factor is not actually produced as a signal at a pin or node of the mixer. As one of skill in the art would appreciate, it would be counterproductive to actually produce such a signal on a pin or node of the mixer since the objective of this implementation is to prevent self-mixing of the LO signal, and production of a signal at a pin or node at twice the LO frequency would defeat that objective. Instead, in this implementation, the multiplication factor simply represents (1) a switching action which occurs at about twice the LO frequency; and (2) the transfer function between the incoming filtered RF signal and the output signal." Accordingly, the rejection of claims 5 and 6 must be **REVERSED**.

Claim 7 includes the system of claim 1 wherein the transmitter comprises: a frequency multiplier coupled to the local oscillator; and an in-phase/quadrature modulator coupled to the frequency multiplier, receiving an in-phase modulation input signal and a quadrature modulation input signal, and outputting a quadrature phase shift keyed signal modulated at the multiplied local oscillator frequency. The Examiner has again improperly relied on multipliers 610 and 611, which, as discussed above, do not perform the claimed function. Accordingly, the rejection of claim 7 must be **REVERSED**.

Claim 8 includes the system of claim 1 wherein the transmitter comprises: an in-phase/ quadrature modulator coupled to the local oscillator, receiving an in-phase modulation input signal and a quadrature phase shift keyed signal modulated at the local oscillator frequency; and a frequency multiplier coupled phase/quadrature modulator and multiplying the quadrature phase shift keyed signal. The Examiner cites to Rozenblit at col. 19, lines 50-67 and col. 20,

lines 1-21 as partial support for the assertion that this claim element is disclosed in Rozenblit, but those sections discuss only the ***receiver*** of Rozenblit, not the ***transmitter***, and the Examiner cites to no section of Rozenblit that relates to the transmitter for the associated claim elements. Accordingly, the rejection of claim 8 must be **REVERSED**.

Claim 11 includes a method for receiving and transmitting data comprising: receiving a carrier signal modulated with a data signal; mixing the carrier signal with a subharmonic local oscillator signal to extract a baseband signal; multiplying the subharmonic local oscillator signal; and modulating an outgoing data signal with the multiplied subharmonic local oscillator signal. As previously discussed, the carrier signal of Rozenblit is the separation frequency between the receive and transmit bands, and the local oscillator of Rozenblit operates at a frequency that is much higher than any of the carrier frequencies disclosed in Rozenblit. Rozenblit simply has no applicability to claim 11, as discussed above, and the rejection of claim 11 must therefore be **REVERSED**.

Claim 12 includes the method of claim 11 wherein mixing the carrier signal with the subharmonic local oscillator signal to extract the baseband signal further comprises: mixing the carrier signal with the subharmonic local oscillator signal to extract an in-phase signal; phase-shifting the subharmonic local oscillator signal; and mixing the carrier signal with the phase-shifted subharmonic local oscillator signal to extract a quadrature phase signal. As previously discussed, the carrier signal of Rozenblit is inapplicable to claim 12, and the rejection of claim 12 must therefore be **REVERSED**.

Claim 13 includes the method of claim 11 wherein mixing the carrier signal with the subharmonic local oscillator signal to extract the baseband signal further comprises: mixing the carrier signal with the subharmonic local oscillator signal to extract an in-phase signal; phase-shifting the carrier signal; and mixing the phase-shifted carrier signal with the

subharmonic local oscillator signal to extract a quadrature phase signal. As previously discussed, the carrier signal of Rozenblit is inapplicable to claim 13, and the rejection of claim 13 must therefore be **REVERSED**.

Claim 14 includes the method of claim 11 wherein modulating the outgoing data signal with the subharmonic local oscillator signal comprises: multiplying the subharmonic local oscillator signal; and modulating an outgoing in-phase data signal and an outgoing quadrature phase data signal with the multiplied subharmonic local oscillator signal. As previously discussed, the local oscillator of Rozenblit is not a subharmonic local oscillator relative to the carrier frequency of Rozenblit. Accordingly, the rejection of claim 14 must be **REVERSED**.

Claim 15 includes the method of claim 11 wherein modulating the outgoing data signal with the subharmonic local oscillator signal comprises: modulating an outgoing in-phase data signal and an outgoing quadrature phase data signal with the subharmonic local oscillator signal to generate a modulated outgoing data signal; and multiplying the modulated outgoing data signal to generate the outgoing data signal. As previously discussed, the local oscillator of Rozenblit is not a subharmonic local oscillator relative to the carrier frequency of Rozenblit. Accordingly, the rejection of claim 15 must be **REVERSED**.

Claim 16 includes the method of claim 11 wherein modulating the outgoing data signal with the subharmonic local oscillator signal comprises: frequency modulating the subharmonic local oscillator signal during a transmit cycle; and interrupting frequency modulation of the subharmonic local oscillator signal during a receive cycle. The Examiner admits in rejecting claim 10 that Rozenblit fails to disclose that the modulator is a frequency modulator, so it is simply impossible, per the Examiner's own admission, for Rozenblit to disclose the method of claim 16. Accordingly, the rejection of claim 16 must be **REVERSED**.

Claim 17 includes the method of claim 16 further comprising opening a phase locked

loop during the transmit cycle to lock the subharmonic local oscillator signal. As previously discussed, the local oscillator of Rozenblit is not a subharmonic local oscillator relative to the carrier frequency of Rozenblit. Accordingly, the rejection of claim 17 must be **REVERSED**.

Claim 18 includes the method of claim 16 further comprising frequency modulating a reference oscillator signal of a phase locked loop that locks the subharmonic local oscillator signal. The Examiner admits in rejecting claim 10 that Rozenblit fails to disclose that the modulator is a frequency modulator, so it is simply impossible, per the Examiner's own admission, for Rozenblit to disclose the method of claim 18. Accordingly, the rejection of claim 18 must be **REVERSED**.

Claim 19 includes the method of claim 11 wherein modulating the outgoing data signal with the subharmonic local oscillator signal comprises: modulating an outgoing in-phase data signal and an outgoing quadrature phase data signal with the subharmonic local oscillator signal at a subharmonic modulation index to generate a modulated outgoing data signal; and multiplying the modulated outgoing data signal by an inverse subharmonic to generate the outgoing data signal. As previously discussed, the local oscillator of Rozenblit is not a subharmonic local oscillator relative to the carrier frequency of Rozenblit. Accordingly, the rejection of claim 19 must be **REVERSED**.

Claim 20 includes a system for transmitting and receiving data comprising: a low noise amplifier receiving a modulated incoming carrier signal having a carrier signal frequency; a local oscillator generating a signal having a subharmonic frequency of the carrier signal; a first mixer coupled to the low noise amplifier and the local oscillator, the first mixer receiving the modulated incoming carrier signal and generating an in-phase incoming data signal; a second mixer coupled to the low noise amplifier and the local oscillator, the second mixer receiving the modulated incoming carrier signal and generating a quadrature phase incoming data signal;

a modulator coupled to the local oscillator, the modulator receiving an outgoing data signal and modulating the outgoing data signal onto the local oscillator signal to generate an outgoing modulated carrier signal; and a transmit amplifier coupled to the modulator, the transmit amplifier amplifying the outgoing modulated carrier signal to a transmission power level. Claim 22 includes the system of claim 20 further comprising a telephone handset coupled to the first mixer, the second mixer, and the modulator, the telephone handset decoding an incoming data signal from the in-phase incoming data signal and the quadrature phase incoming data signal, and generating the outgoing data signal. As previously discussed, Rozenblit fails to disclose a local oscillator generating a signal having a subharmonic frequency of the carrier signal. Accordingly, the rejection of claims 20 and 22 must be **REVERSED**.

Claim 21 includes the system of claim 20 further comprising a general purpose computing platform coupled to the first mixer, the second mixer, and the modulator, the general purpose computing platform decoding an incoming data signal from the in-phase incoming data signal and the quadrature phase incoming data signal, and generating the outgoing data signal. Rozenblit fails to disclose a general purpose computing platform, and it is telling that the Examiner is unable to identify any such general purpose computing platform by item number in a drawing of Rozenblit. Accordingly, the rejection of claim 21 must be **REVERSED**.

Claim 23 includes the system of claim 20 wherein an antenna is directly connected to the low noise amplifier, and the low noise amplifier is directly connected to the one or more subharmonic local oscillator mixers. The elements relied on by the Examiner as allegedly showing this direct connection are clearly not directly connected. Accordingly, the rejection of claim 23 must be **REVERSED**.

2. **The Examiner has improperly rejected claim 10 under 35 U.S.C. § 103(a) over Rozenblit.**

Claim 10 includes the system of claim 1 wherein the transmitter comprises: a ***frequency modulator*** coupled to the local oscillator, where the local oscillator is modulated by the ***frequency modulator***; a voltage-controlled reference oscillator coupled to the ***frequency modulator***, where the voltage-controlled reference oscillator is modulated by the ***frequency modulator***; and a phase locked loop coupled to the local oscillator in a feedback loop, the phase locked loop further coupled to the voltage controlled oscillator. The Examiner rejects claim 10 based on official notice, but official notice is inappropriate unless the facts asserted to be well-known, or to be common knowledge in the art are capable of instant and unquestionable demonstration as being well-known. As noted in M.P.E.P. 2144.03, "Official notice without documentary evidence to support an examiner's conclusion is permissible only in some circumstances. While "official notice" may be relied on, these circumstances should be rare when an application is under final rejection or action under 37 CFR 1.113. Official notice unsupported by documentary evidence should only be taken by the examiner where the facts asserted to be well-known, or to be common knowledge in the art are capable of instant and unquestionable demonstration as being well-known. As noted by the court in *In re Ahlert*, 424 F.2d 1088, 1091, 165 USPQ 418, 420 (CCPA 1970), the notice of facts beyond the record which may be taken by the examiner must be "capable of such instant and unquestionable demonstration as to defy dispute" (citing *In re Knapp Monarch Co.*, 296 F.2d 230, 132 USPQ 6 (CCPA 1961))." In the present case, the Examiner has failed to demonstrate the claimed frequency modulator meets these strict requirements, and merely asserts that "a frequency modulator is well known in the art." However, claim 10 does not simply add the limitation of a

frequency modulator. Instead, it provides a number of limitations that include the frequency modulator, as noted above in bold and italics. As such, the burden is on the Examiner to show not only that a frequency modulator is well known in the art, but that the claimed use of a frequency modulator is well known in the art. Accordingly, the rejection of claim 10 must be **REVERSED**.

3. The Examiner has improperly rejected claim 9 under 35 U.S.C. § 103(a) over Rozenblit in view of Bickley.

Claim 9 includes the system of claim 1 wherein the transmitter comprises: a ***frequency modulator*** coupled to the local oscillator, wherein the local oscillator is modulated by the ***frequency modulator***; a phase locked loop coupled to the ***frequency modulator*** and the local oscillator; and a switch coupled between the local oscillator and the phase locked loop, wherein the switch can couple the phase locked loop to the local oscillator during a transmit cycle and can decouple the phase locked loop from the local oscillator during a receive cycle. As noted above and admitted by the Examiner, Rozenblit fails to disclose a frequency modulator, and Bickley fails to correct this deficiency. For at least the reasons noted above in regards to the Examiner's failure to substantiate the rejection of claim 10 based on official notice, the rejection of claim 9 must also be **REVERSED**.

VIII APPENDIX OF CLAIMS (37 C.F.R. 41.37(c)(8))

The text of the claims involved in the appeal are:

1. A system for transmitting and receiving data comprising:

a direct-conversion receiver receiving a signal modulated on a carrier frequency signal, the direct-conversion receiver further comprising one or more subharmonic local oscillator mixers;

a local oscillator coupled to the direct conversion receiver, the local oscillator generating a signal having a frequency equal to a subharmonic of the carrier frequency signal; and

a transmitter coupled to the local oscillator.

2. The system of claim 1 wherein the direct conversion receiver further comprises:

a phase shifter coupled to a first subharmonic local oscillator mixer, where the output of the first subharmonic local oscillator mixer is used to generate a quadrature signal of a phase shift keyed signal; and

a second subharmonic local oscillator mixer, where the output of the second subharmonic local oscillator mixer is used to generate an in-phase signal of a phase shift keyed signal.

3. The system of claim 2 wherein the phase shifter is further coupled to the local oscillator.

4. The system of claim 2 further comprising a low-noise amplifier coupled to the phase shifter, wherein the signal modulated on the carrier frequency signal is received by the low-noise amplifier and is transmitted to the phase shifter after being amplified.

5. The system of claim 1 further comprising a frequency multiplier coupled between the local oscillator and the transmitter, wherein the frequency multiplier increases the frequency of the oscillator.

6. The system of claim 5 wherein the frequency multiplier increases the frequency of the oscillator up to the frequency of the carrier signal.

7. The system of claim 1 wherein the transmitter comprises:

a frequency multiplier coupled to the local oscillator; and

an in-phase/quadrature modulator coupled to the frequency multiplier, receiving an in-phase modulation input signal and a quadrature modulation input signal, and outputting a quadrature phase shift keyed signal modulated at the multiplied local oscillator frequency.

8. The system of claim 1 wherein the transmitter comprises:

an in-phase/ quadrature modulator coupled to the local oscillator, receiving an in-phase modulation input signal and a quadrature phase shift keyed signal modulated at the local oscillator frequency; and

a frequency multiplier coupled phase/quadrature modulator and multiplying the quadrature phase shift keyed signal.

9. The system of claim 1 wherein the transmitter comprises:

a frequency modulator coupled to the local oscillator, wherein the local oscillator is modulated by the frequency modulator;

a phase locked loop coupled to the frequency modulator and the local oscillator; and

a switch coupled between the local oscillator and the phase locked loop, wherein the switch can couple the phase locked loop to the local oscillator during a transmit cycle and can decouple the phase locked loop from the local oscillator during a receive cycle.

10. The system of claim 1 wherein the transmitter comprises:

a frequency modulator coupled to the local oscillator, where the local oscillator is modulated by the frequency modulator;

a voltage-controlled reference oscillator coupled to the frequency modulator, where the voltage-controlled reference oscillator is modulated by the frequency modulator; and

a phase locked loop coupled to the local oscillator in a feedback loop, the phase locked loop further coupled to the voltage controlled oscillator.

11. A method for receiving and transmitting data comprising:

receiving a carrier signal modulated with a data signal;

mixing the carrier signal with a subharmonic local oscillator signal to extract a baseband signal;

multiplying the subharmonic local oscillator signal; and

modulating an outgoing data signal with the multiplied subharmonic local oscillator signal.

12. The method of claim 11 wherein mixing the carrier signal with the subharmonic local oscillator signal to extract the baseband signal further comprises:

mixing the carrier signal with the subharmonic local oscillator signal to extract an in-phase signal;

phase-shifting the subharmonic local oscillator signal; and

mixing the carrier signal with the phase-shifted subharmonic local oscillator signal to extract a quadrature phase signal.

13. The method of claim 11 wherein mixing the carrier signal with the subharmonic local oscillator signal to extract the baseband signal further comprises:

mixing the carrier signal with the subharmonic local oscillator signal to extract an in-phase signal; phase-shifting the carrier signal; and

mixing the phase-shifted carrier signal with the subharmonic local oscillator signal to extract a quadrature phase signal.

14. The method of claim 11 wherein modulating the outgoing data signal with the subharmonic local oscillator signal comprises:

multiplying the subharmonic local oscillator signal; and

modulating an outgoing in-phase data signal and an outgoing quadrature phase data signal with the multiplied subharmonic local oscillator signal.

15. The method of claim 11 wherein modulating the outgoing data signal with the subharmonic local oscillator signal comprises:

modulating an outgoing in-phase data signal and an outgoing quadrature phase data signal with the subharmonic local oscillator signal to generate a modulated outgoing data signal; and

multiplying the modulated outgoing data signal to generate the outgoing data signal.

16. The method of claim 11 wherein modulating the outgoing data signal with the subharmonic local oscillator signal comprises:

frequency modulating the subharmonic local oscillator signal during a transmit cycle; and

interrupting frequency modulation of the subharmonic local oscillator signal during a receive cycle.

17. The method of claim 16 further comprising opening a phase locked loop during the transmit cycle to lock the subharmonic local oscillator signal.

18. The method of claim 16 further comprising frequency modulating a reference oscillator signal of a phase locked loop that locks the subharmonic local oscillator signal.

19. The method of claim 11 wherein modulating the outgoing data signal with the subharmonic local oscillator signal comprises:

modulating an outgoing in-phase data signal and an outgoing quadrature phase data signal with the subharmonic local oscillator signal at a subharmonic modulation index to generate a modulated outgoing data signal; and

multiplying the modulated outgoing data signal by an inverse subharmonic to generate the outgoing data signal.

20. A system for transmitting and receiving data comprising:

a low noise amplifier receiving a modulated incoming carrier signal having a carrier signal frequency;

a local oscillator generating a signal having a subharmonic frequency of the carrier signal;

a first mixer coupled to the low noise amplifier and the local oscillator, the first mixer receiving the modulated incoming carrier signal and generating an in-phase incoming data signal;

a second mixer coupled to the low noise amplifier and the local oscillator, the second mixer receiving the modulated incoming carrier signal and generating a quadrature phase incoming data signal;

a modulator coupled to the local oscillator, the modulator receiving an outgoing data signal and modulating the outgoing data signal onto the local oscillator signal to generate an outgoing modulated carrier signal; and

a transmit amplifier coupled to the modulator, the transmit amplifier amplifying the outgoing modulated carrier signal to a transmission power level.

21. The system of claim 20 further comprising a general purpose computing platform coupled to the first mixer, the second mixer, and the modulator, the general purpose computing platform decoding an incoming data signal from the in-phase incoming data signal and the quadrature phase incoming data signal, and generating the outgoing data signal.

22. The system of claim 20 further comprising a telephone handset coupled to the first mixer, the second mixer, and the modulator, the telephone handset decoding an

incoming data signal from the in-phase incoming data signal and the quadrature phase incoming data signal, and generating the outgoing data signal.

23. The system of claim 20 wherein an antenna is directly connected to the low noise amplifier, and the low noise amplifier is directly connected to the one or more subharmonic local oscillator mixers.

IX. EVIDENCE APPENDIX (37 C.F.R. 41.37(c)(9))

None.

X. RELATED PROCEEDINGS APPENDIX (37 C.F.R. 41.37(c)(10))

None.

Dated: August 27, 2007

Respectfully submitted,

JACKSON WALKER L.L.P.

By: ______________________________

Christopher J. Rourk
Reg. No. 39,348

901 Main Street, Suite 6000
Dallas, Texas 75202
Telephone: (214) 953-5990
Facsimile: (214) 661-6604
E-Mail: crourk@jw.com